

Amendments to the Claims:

Claims 2-64 were canceled in a preliminary amendment. This amendment also cancels claim 1 and adds the following claims beginning with claim 65.

Listing of Claims:

65. A fluid machine comprising:

a housing defining a generally spherical interior, said housing having a fluid inlet and a fluid outlet in communication with the interior of said housing;

a primary vane disposed within the interior of said housing;

a rotary shaft having a primary axis of rotation mounted to said housing, said primary vane being coupled to said rotary shaft so that said primary vane is rotated about said primary axis by said rotary shaft;

a fixed shaft which extends into said interior of said housing opposite said rotary shaft, the axis of said fixed shaft being fixed relative to said rotary shaft, and said fixed shaft having a spherical end portion about which said primary vane rotates;

said fixed shaft being adjustably mounted to said housing so that said fixed shaft can be rotated into various fixed positions;

a carrier ring rotatably carried on said spherical end portion of said fixed shaft, the axis of rotation of said carrier ring being oriented at an oblique angle in relation to said primary axis;

a secondary vane pivotally mounted about an axis perpendicular to said primary axis to allow said secondary vane to pivot between open and closed positions with respect to said primary vane as the primary and secondary vanes are rotated together by said rotary shaft about said primary axis, said primary and secondary vanes dividing said interior of said housing into chambers with the volume of said chambers varying as said secondary vane is moved between the open and closed positions, said secondary vane also being pivotally coupled to said carrier ring so that said secondary vane is pivotal about an axis perpendicular to said carrier ring's axis of rotation, the rotation of said carrier ring causing said secondary vane to reciprocate between the open and closed positions as said secondary vane is rotated about said primary axis by said rotary shaft;

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and wherein a controller is used that can cause said fixed shaft to be rotated to automatically control and adjust the fluid flow or capacity of the fluid machine.

66. The fluid machine of claim 65, wherein said controller controls a worm gear and worm coupled to said fixed shaft to rotate said fixed shaft and thereby adjust the fluid flow or capacity of the fluid machine.
67. The fluid machine of claim 65, wherein said controller changes the degree of communication of the fluid inlet and outlets ports with the chambers by adjusting the rotation of said fixed shaft.
68. The fluid machine of claim 65, wherein the fluid machine is a motor.
69. The fluid machine of claim 65, wherein the fluid machine is a compressor.
70. The fluid machine of claim 65, wherein the fluid machine is a fluid pump.
71. A method of regulating fluid flow in a fluid machine comprising:

providing a housing of the machine having a spherical hollow interior and having first and second fluid ports that are spaced apart from each other to provide fluid communication between the exterior of the housing and the interior, at least one of the first and second ports connected to a fluid source;

providing a primary vane disposed within the housing, the primary vane being rotatable about a primary axis;

providing a fixed shaft that extends into the housing interior, the fixed shaft having a spherical end portion disposed within the interior about which the primary vane rotates, the fixed shaft being adjustably mounted to the housing so that the fixed shaft can be oriented in various fixed positions;

providing a carrier ring rotatably mounted on the spherical end portion of the fixed shaft, the carrier ring rotating about a carrier ring axis that is oriented at an oblique angle with respect to the primary axis;

providing a secondary vane that is pivotally mounted to the primary vane so that the secondary vane is pivotal about an axis perpendicular to the primary axis to allow the secondary vane to pivot between open and closed positions with respect the primary vane as the primary and secondary vane are rotated together about the primary axis, the primary and secondary vanes dividing the interior of the housing into chambers,

the secondary vane being pivotally coupled to the carrier ring so that the secondary vane is pivotal about an axis perpendicular to the carrier ring axis;

rotating the primary and secondary vane about the primary axis while the fixed shaft is in a first fixed position, the rotation of the secondary vane about the primary axis causing the carrier ring to rotate about the carrier ring axis and thus cause the secondary vane to reciprocate between the open and closed positions as the primary and secondary vane are rotated about the primary axis, the primary and secondary vanes defining an inlet chamber as the secondary vane is reciprocated to the open position so that fluid enters the inlet chamber through the first port while the first port is in communication with the inlet chamber, and

wherein the primary and secondary vanes define a discharge chamber as the secondary vane is reciprocated to the closed position so that fluid exits the discharge chamber through the second port while the second port is in communication with the discharge chamber;

and controlling by means of a controller the fixed shaft to a second position so that the degree of communication of the first and second ports with the inlet and discharge chambers defined by the primary and secondary vanes as the primary and secondary vanes are rotated about the primary axis is changed to vary the fluid flow through the machine.

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72. The method of claim 71, wherein the direction of fluid flow is reversed when the fixed shaft is moved to a second position, the first port communicating with the discharge chamber and the second port communicating with the inlet chamber when the fixed shaft is in the second position.
73. The method of claim 71, wherein the direction of rotation of the primary and secondary vanes about the primary axis remains substantially constant.
74. The method of claim 71, wherein the rate of flow of the fluid through the device is changed when the fixed shaft is moved to a second position.
75. The method of claim 71, wherein the rate of rotation of the primary and secondary vanes about the primary axis is maintained substantially constant.
76. A fluid machine comprising:

a housing defining a generally spherical interior, said housing having a fluid inlet and a fluid outlet in communication with the interior of said housing;

a primary vane disposed within the interior of said housing;

a rotary shaft having a primary axis of rotation mounted to said housing, said primary vane being coupled to said rotary shaft so that said primary vane is rotated about said primary axis by said rotary shaft;

a fixed shaft which extends into said interior of said housing opposite said rotary shaft, said fixed shaft having a spherical end portion about which said primary vane rotates;

a carrier ring rotatably carried on said spherical end portion of said fixed shaft, the axis of rotation of said carrier ring being oriented at an oblique angle in relation to said primary axis;

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a secondary vane pivotally mounted about an axis perpendicular to said primary axis to allow said secondary vane to pivot between open and closed positions with respect to said primary vane as the primary and secondary vanes are rotated together by said rotary shaft about said primary axis, said primary and secondary vanes dividing said interior of said housing into chambers with the volume of said chambers varying as said secondary vane is moved between the open and closed positions, said secondary vane also being pivotally coupled to said carrier ring so that said secondary vane is pivotal about an axis perpendicular to said carrier ring's axis of rotation, the rotation of said carrier ring causing said secondary vane to reciprocate between the open and closed positions as said secondary vane is rotated about said primary axis by said rotary shaft;

wherein said primary vane is formed and connected as two halves each having a flat inner surface that abuts sealingly against the inner surface of the other half and are joined at opposite ends to define a central circular opening.

77. A fluid machine comprising:

a housing defining a generally spherical interior, said housing having a fluid inlet and a fluid outlet in communication with the interior of said housing;

a primary vane disposed within the interior of said housing;

a rotary shaft having a primary axis of rotation mounted to said housing, said primary vane being coupled to said rotary shaft so that said primary vane is rotated about said primary axis by said rotary shaft;

a fixed shaft which extends into said interior of said housing opposite said rotary shaft, said fixed shaft having a spherical end portion about which said primary vane rotates;

a carrier ring rotatably carried on said spherical end portion of said fixed shaft, the axis of rotation of said carrier ring being oriented at an oblique angle in relation to said primary axis;

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a secondary vane pivotally mounted about an axis perpendicular to said primary axis to allow said secondary vane to pivot between open and closed positions with respect to said primary vane as the primary and secondary vanes are rotated together by said rotary shaft about said primary axis, said primary and secondary vanes dividing said interior of said housing into chambers with the volume of said chambers varying as said secondary vane is moved between the open and closed positions, said secondary vane also being pivotally coupled to said carrier ring so that said secondary vane is pivotal about an axis perpendicular to said carrier ring's axis of rotation, the rotation of said carrier ring causing said secondary vane to reciprocate between the open and closed positions as said secondary vane is rotated about said primary axis by said rotary shaft;

wherein said secondary vane is formed and connected as two halves each having a flat inner surface that abuts sealingly against the inner surface of the other half and are joined at opposite ends to define a central circular opening.
